

**BIENNIUM REPORT ON THE
COTTON ECONOMICS RESEARCH
LINE-ITEM, 1997/98 – 1998/99**

CER-99-51

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TABLE OF CONTENTS

	<u>Page</u>
Summary	4
Appendix A: Progress Reports of Cotton Economics Research Projects	7
Adding the Seed Component to the Texas Tech Cotton Variety Selection Model	8
Analysis of Risk and Returns from Prices, Yields and Production Costs in Cotton and Competing crops in Texas	9
Comparing Costs of Alternative Cotton Harvesting Systems in Texas	10
A Comparison of Bt Cotton and Bt Corn Varieties in the Texas High Plains Region with Respect to Relative Benefits to Producers	11
Contributions of Biotechnology Research to Sustainable Crop Production Systems	12
Cost Trade-offs of Stripper-Mounted Bur Extractors	14
Cottonseed Pricing Structure in Texas: The Role of Quality, Supply, and Demand Factors	15
Daily Price Analysis and Reporting for the Texas-Oklahoma Cotton Market	16
Demand for and Marketing of Cotton Gin Trash as a Feedlot Ingredient in the Texas High Plains	17
Developing a Cotton Processing Quality Simulation Model	19
Development of a National Daily Price Information System for Cotton	20
The Economics of Precision Farming in Cotton Production	22
Effects of Cotton Price Policies in India and Pakistan on Domestic Cotton and Textile Industries and on Trade in Cotton and Yarn	24
Evaluating Crop and Revenue Insurance Products as Risk Management Tools for Texas Cotton Producers	25
Gin Lint Cleaning to Maximize Producer Net Returns	26
Inter-Sectoral Relationships in the Cotton Industry	27

Management Strategies for Optimum Input Use, Yields and Quality of Cotton in the Texas High Plains	28
A Marketing Strategy for Cotton Producers based on Mean Reversion in Cotton Futures Prices	29
Standardized Performance Analysis for Cotton Production	30
Supply and Demand for Fiber Attributes for the Texas and Oklahoma Producer Cotton Market	32
Textile Manufacturers' Pricing of Cotton Quality Attributes	33
Appendix B: Summary of Cotton Economics Research Funding, 1997/98 – 1998/99	34
Appendix C: Published Output Related to Cotton Economics, 1997/98 – 1998/99	36
Appendix D: Presentations That Were Not Published in Any Outlet, 1997/98 – 1998/99	42
Appendix E: Summary of Service Activities Related to Cotton Economics, 1997/98 – 1998/99	46
Appendix F: Cotton Economics Research Update: January 1998, July 1998, January 1999, and July 1999	48

**BIENNIUM REPORT ON THE COTTON ECONOMICS RESEARCH
SPECIAL ITEM, 1997/98 – 1998/99**

Summary

Funding for the Cotton Economics Research Special Item from the Texas legislature became effective on September 1, 1995, and by the end of 1998/99 fiscal year, the Cotton Economic Research Special-Item has been funded at \$133,478 per year for four years. The first biennium (1995/96-1996/97) report was produced in September, 1997 (Report No. CER-97-16). This report summarizes the activities and accomplishments in Cotton Economics Research, which is conducted within the Cotton Economics Research Institute at Texas Tech University, during the 1997/98-1998/99 biennium. Of the \$266,956 funding for the last biennium, \$142,547 (53%) was allocated for student assistantships, \$80,686 (30%) for faculty salaries, and \$45,723 (17%) for maintenance and operation (supplies, travel, equipment, etc.).

A total of eight research projects were funded with the Special Item funding for the last biennium. Another thirteen externally-funded projects were initiated during the same time period. Each of the projects, both internally and externally funded, is summarized in the attached progress reports (Appendix A). These research activities covered diverse subject-matter areas, including production inputs and costs, production management practices, harvesting costs, ginning performance and costs, ginning by-products, marketing and pricing, industry structural relationships, and textile processing costs as they relate to Texas cotton.

The leverage ratio for the last two years of the biennium was 1.6:1, which shows that \$1.60 in external funding was generated for each \$1.00 in state line-item support. This has grown from a leverage ratio of 1.2:1 from the 1995/96-1996/97 biennium. Other measures of productivity are publications and service to the cotton industry. A listing of publications is provided in Appendix C. Overall, the faculty authored/co-authored 55 publications during the past two years (compared to 51 publications during the 1995/96-1996/97 biennium), which

included 12 professional journal articles, 24 proceeding papers from industry and professional meetings, two technical articles, twelve research reports, and five published abstracts from professional meetings related to cotton economics research. Faculty members in the department also engaged in a broad range of service activities for industry (domestic and international), government, and professional organizations that are directly related to cotton; these are summarized in Appendix D. There were also several stand-alone presentations at important industry meetings that were not published (see Appendix E). All of the Principal Investigators answer many questions and requests for information to the industry and general public on a regular basis, although no formal record of all these activities is maintained.

Another important result of the program is the education and training of students. During the last biennium there were 15 graduate students (4 Ph.D. and 11 M.S.) supported in whole or in part from research funding of cotton economics projects; another 14 undergraduate students worked on these projects as well. It is noteworthy that the departmental students co-authored 47 of the 55 cotton related research publications and made several presentations at important industry meetings such as the Beltwide Cotton Conferences during the last two years.

Many of the accomplishments summarized here in this report would not have been possible without the Special Item funds from the Texas Legislature and the able guidance of the Cotton Economics Research Advisory Committee members. The Committee represents industry segments as well as academia and government, and the members assist with keeping the program focused on issues relevant to the cotton industry and in the management of the program.

The advisory committee members for the 1997/98-1998/99 biennium were:

Dr. Carl Anderson, Cotton Marketing Specialist, Texas Agricultural Extension Service, Texas A&M University, College Station, Texas – 1997-01.

Mr. Roy Baker, Research Leader, Cotton Ginning Laboratory, Agricultural Research Service, USDA, Lubbock, Texas –1996-98.

Mr. Tommy Fondren, Farmer and Agribusinessman, Lorenzo, Texas – 1997-99.

Mr. Curtis Griffith, CEO, City Bank, Lubbock, Texas – 1998-00.

Mr. George Herron, Vice President, Cotton Procurement, dan River, Inc., Danville, Virginia – 1996-98.

Mr. Robert Joseph, President, International Cotton Marketing, Inc., Lubbock, Texas – 1997-99.

Mr. Darryl Lindsey, Vice President, Plains Cotton Cooperative Association, Lubbock, Texas – 1997-99.

Dr. James Supak, Associate Head, Soil and Crop Sciences, Texas A&M University, College Station, Texas – 1997-99.

Dr. Dan Upchurch, Director, Cropping Systems Research Laboratory, USDA-Agricultural Research Services, Lubbock, Texas – 1998-00.

Mr. Tony Williams, Executive Vice President, Texas Cotton Ginners Association, Austin, Texas – 1998-00.

Many new things continue to happen in the Cotton Economics Research program and are worth mentioning here. The program is now operating under the Cotton Economics Research Institute, three new faculty members (Drs. Michael Livingston, Octavio Ramirez, and David Willis) have joined the Department of Agricultural and Applied Economics and the faculty team of researchers, each of whom has initiated important cotton related research projects. Another faculty (Dr. Samarendu Mohanty) has been hired and will start in January, 2000.

APPENDIX A

PROGRESS REPORTS OF COTTON ECONOMICS

RESEARCH PROJECTS, 1997/98 – 1998/99

RESEARCH PROJECT PROGRESS REPORT

Title: Adding the Seed Component to the Texas Tech Cotton Variety Selection Model

Principal Investigator: Emmett Elam

Cooperators: Don Ethridge and John Gannaway (TAES)

Source and Amount of Funding: Cotton Foundation and Southern Cotton Ginners' Association: \$12,000.

Time Period: July 1997 – June 1999.

Objectives: To develop a computer model using lint and seed components to aid in cotton variety selection for the U.S. Cotton Belt.

Description of Project and Significance: A cotton variety selection model was developed to include the seed component (seed yield and quality) in addition to the usual lint component (lint yield and quality). A computer implementation of the model--named the Cotton Wizard--has been developed to assist decision makers in cotton variety selection. The program uses objective data generated by agricultural experiment stations across the U.S. Cotton Belt, or from other sources provided by the program user. The decision criteria for variety selection is based on expected economic return (mean net revenue) of a variety and the variability of returns (coefficient variation). Total revenue is calculated from lint prices and seed prices, and lint and seed yields. Lint and seed prices are determined by their respective quality characteristics. Adjustments are made for costs that may differ among varieties, such as planting seed cost, and harvest and ginning costs. Users are provided with information on varieties--such as mean net revenue (total revenue - costs), variability in net revenue, and agronomic characteristics--to aid in the decision process. The Cotton Wizard program is distributed as a Microsoft Windows compatible product.

Accomplishments: A new data set was developed for the Cotton Wizard program to include cotton varieties grown in west Texas performance trials. This data set includes all varieties grown at five west Texas locations for irrigated and dryland trials for the years 1991-98. We completed final checking of the results from the program. The Cotton Wizard computer program is being made available via the Internet to interested parties.

Funding Generated: None.

Future Plans: Develop annual updates of the performance trial data sets used by the Cotton Wizard computer program, and incorporate the updates into the program.

Public Dissemination of Results: Two presentations were made at the Beltwide Cotton Conferences; two presentations were made at industry meetings. In addition, interviews were done with one radio station and one magazine journalist; one journal article (rough draft) was written.

RESEARCH PROJECT PROGRESS REPORT

Title: Analysis of Risk and Returns from Prices, Yields and Production Costs in Cotton and Competing crops in Texas

Principal Investigator: Dr. Octavio A. Ramirez.

Source and Amount of Funding: Cotton Economics Research Institute: \$23,875.

Time Period: Sept. 1998 – Aug. 1999.

Objectives: To understand and predict the joint behavior of cotton, wheat, sorghum and corn prices, yields and production costs through time, at the farm, regional (West Texas) and state levels; and to estimate expected profits and to assess their variability and the economic risk associated to different crop-share scenarios.

Description of the Project and Significance: Cotton, wheat, sorghum and corn are key agricultural commodities in Texas. Both average profitability and risk are important to assess the potential impact of changes in the relative share of the agricultural commodities grown, on the welfare of farmers and of the local, regional and state economy. The risk/return competition among crops is quite complex. For instance, low yields for one commodity may often be accompanied by high prices, and vice versa. High/low yields of that commodity may or may not usually be accompanied by high/low yields of others. The effect of generalized (aggregate) yield fluctuations on price may be quite different depending on the commodity. The trends of commodity prices and their variability could differ, as well. The yield and price patterns of certain commodities may be more abnormal than others. Individual farmer decisions have an impact at the aggregate (county, region and state) level. County, regional and state authorities need to be aware of the economic risks and returns associated with different crop-share (diversification) scenarios. Understanding of those relationships will improve farmer and policy makers' decision making, specially considering the changes in the commodity price environment that may have resulted from the 1996 Farm Bill.

Accomplishments: Accomplishments to date include the modeling of the cotton, corn, wheat and sorghum irrigated and dry-land yield distributions and of the U.S. price distributions for these same commodities.

Funding Generated: The preliminary results of this research project have been used to strengthen the justification for externally funded projects submitted to the Texas Higher Education Coordinating Board (ATP) and to be submitted to the Federal and Texas Legislatures.

Future Plans: The estimated price and yield distributions will be used for the proposed policy/risk analyses.

Public Dissemination of Results: The preliminary results on the West Texas crop yield distributions will be presented at the 2000 Cotton Beltwide Conferences. The results of the policy/risk analyses will be shared with county, regional and state authorities.

RESEARCH PROJECT PROGRESS REPORT

Title: Comparing Costs of Alternative Cotton Harvesting Systems in Texas

Principal Investigator(s): Sukant Misra
Cooperator: Dr. Alan Brashear, ARS/USDA

Source and Amount of Funding: Cotton Incorporated: \$14,548.

Time Period: Nov. 1998 – Aug. 1999.

Objectives: The objective of this research is to evaluate performance and cost effectiveness of selected cotton harvesting systems in Texas

Description of Project and Significance: A persisting question with cotton production is that of identifying cost reducing strategies to help producers in effective risk management. The cotton harvesting component of the cotton production system is complex and expensive. Because of significant advancement in harvesting and seed cotton handling technology, producers now have a choice of alternative cotton harvesting systems.

Accomplishments: We personally visited several producers, custom harvesters, and implement companies and collected most of the necessary data for our analyses. After finalizing the analytical framework for identifying costs of alternative harvesting systems in cotton harvesting, we initiated the analysis in January 1999. We have now completed the estimation of buying cost, maintenance cost, and most of the variable costs for each identified cotton harvesting system. We are now in the process putting all our information together to undertake a cost comparison among the alternative harvesting systems and to identify threshold acreage level for each harvesting system.

Funding Generated: The research has generated no further funding at this time.

Future Plans: This research is expected to be concluded by December of 1999.

Public Dissemination of Results: Results will be presented at the 2000 Beltwide Cotton Conferences.

RESEARCH PROJECT PROGRESS REPORT

Title: A Comparison of Bt Cotton and Bt Corn Varieties in the Texas High Plains Region with Respect to Relative Benefits to Producers

Principal Investigator: Phillip Johnson

Source and Amount of Funding: Plant Stress Reduction through Biotechnology: \$22,631.

Time Period: Sept. 1998 – Aug. 1999.

Objectives: Evaluate the potential impacts on costs of production, yields, and profitability of the use of Bt cotton and corn varieties in the Texas High Plains (THP). Specifically: (1) estimate production costs and profitability of Bt cotton and corn varieties in the THP; (2) compare potential returns for Bt cotton and Bt corn production; and (3) evaluate possible environmental benefits from reduced chemical use for insect control.

Description of Project and Significance: The use of transgenic crop varieties in the THP is becoming an important production practice for many farmers. Transgenic crop varieties have the potential of reducing production input costs and the use of chemicals in the crop production system. Bt cotton and corn are transgenic crop varieties that have the potential of reducing chemical inputs in the production system. Bt crop varieties contain a gene that produces the bacterium *Bacillus thuringiensis*, which produces a toxin that kills certain species of insects, including the cotton bollworm, tobacco budworm, corn earworm, southwestern corn boar, and European corn boar. The use of Bt varieties account for approximately 25% of the nation's corn acres and 12% of the nation's cotton acres.

In the THP, Bt cotton varieties have not found wide spread use because infestations and damage from the cotton bollworm in this region are not significant enough to justify the expense of Bt varieties. Furthermore, seed companies have not produced Bt cotton varieties that are adapted to this region because of the limited demand potential.

Resistance to the Bt toxin is a major concern with regard to the use of Bt crop varieties. Resistance management calls for planting acreages of non-Bt crops with Bt crops to prevent insect resistance. The Environmental Protection Agency (EPA) has administrative control over which Bt crops and varieties are available in particular regions of the country. The THP has been designated for the use of Bt cotton, therefore, Bt corn varieties cannot be planted in the THP, except for the extreme northern counties of the Texas Panhandle. The EPA zoning restrictions have prevented corn producers in the THP from adopting the use of Bt corn varieties. Many Bt corn varieties are adapted to the THP and could be beneficial in reducing the cost of chemical applications for southwestern corn bore control, reducing losses from corn earworm damage, and reducing field losses from lodging.

Accomplishments: None to date.

Funding Generated: None to date.

Public Dissemination of Results: None to date.

RESEARCH PROJECT PROGRESS REPORT

Project Title: Contributions of Biotechnology Research to Sustainable Crop Production Systems

Principal Investigator: Eduardo Segarra

Research Assistants: Talah S. Arabiyat and Jingwei Wei

Source and Amount of Funding: CASNR Plant Stress Program: \$17,000.

Time Period: September, 1998 - August, 1999.

Objective: To evaluate the contributions/impacts of biotechnology on: (1) profitability and the long term viability and sustainability of the natural resource base for agricultural production in the Texas High Plains, and (2) natural resource (cropland/water) valuation.

Description of Project and Significance: Modification of the genetic structure of crop plants has been the focus of a long and growing list of crop production improvement strategies. Biotechnological approaches can lead to transgenic crop plant development that can optimize the exploitation of specific environments. The Texas High Plains is an important area for dryland and irrigated production of cotton, grain sorghum, wheat and corn. This area produces over 20 percent of the national production of cotton, and over 10 percent of the national production of grain sorghum. In the Texas High Plains approximately 3 million acres of cropland are irrigated with water extracted from the Ogallala Aquifer. Furthermore, the semi-arid climate in the Texas High Plains along with the existence of abundant water resources and feed grains, make this area ideal for cattle feeding activities. Over 25 percent of the annual national production of fed cattle, over 5 million head, are produced in this area. As it would be expected, the economy of the Texas High Plains critically depends on crop and livestock production activities, which in turn critically depend on the availability of water and other natural resource endowments available in the area. It is estimated that over 40 percent of the pre-development water stock of underground water in the Ogallala Aquifer has been used. For this reason, it is important to find out how biotechnological advances and other production technologies, irrigation technologies in particular, which available to agricultural producers in the area, can help enhance or at least maintain the viability of agricultural production activities in the Texas High Plains.

Accomplishments: Two main activities were accomplished this year under this project. First, Talah S. Arabiyat finished her M.S. thesis entitled: "Agricultural Sustainability in the Texas High Plains: The Role of Advanced Irrigation Systems and Biotechnology." In this study we found that adoption of biotechnologies in crop production could contribute significantly to ground water conservation efforts. The second major activity accomplished under this project was Jingwei Wei's M.S. thesis proposal entitled: "Evaluation of the Impacts of Technological Progress on Cropland Values" which is in the last stages of preparation. It is anticipated that Jingwei will defend her proposal in the Fall semester, 1999 and will complete her program during the upcoming year.

Funding Generated: None to date.

Future Plans: To continue to evaluate the possible contributions of biotechnology on profitability and natural resource valuation. Additional funding will be sought from ATP/ARP, NRI, and other research funding programs/initiatives.

Public Dissemination of Results: A journal article out of Talah's study has been accepted for publication in AgBioForum. It is anticipated that additional publications will be published, and presentations at regional and national meetings will be made.

RESEARCH PROJECT PROGRESS REPORT

Title: Cost Trade-offs of Stripper-Mounted Bur Extractors

Principal Investigators: Sukant Misra and Alan Brashears (ARS/USDA)

Source and Amount of Funding: Cotton Incorporated and the Texas State Support Committee: \$20,600.

Time Period: Jan. 1997 – Dec. 1998.

Objectives: To determine the costs and benefits of investing in field cleaners for stripper harvesting from growers' and ginners' perspective.

Description of Project and Significance: Bur extractors are now commercially available to cotton producers for use on stripper harvesters to remove extraneous material at the time of harvest. Research suggests that field cleaners have the potential to improve lint turnout and generate savings for producers in ginning charges. However, producers' saving comes at the expense of ginners. If ginners have to absorb this loss, it could affect their profitability. However, ginners may also experience savings in transportation costs and operating costs of gins. Overall estimates for cost and benefits of field cleaners are currently unavailable. This research is designed to study the costs and benefits of investing in field cleaners for stripper harvesting from growers' and ginners' perspectives. It will help producers in making an informed decision about investing in field cleaners and will help ginners in making an informed decision about ginning price structure.

Accomplishments: This study provides estimates of cost/trade-offs of stripper mounted bur extractors from the producer, ginner, and the overall cotton industry perspective. Results to date indicate that cotton producers incur net savings of about \$7.00 per bale as a result of using a bur extractor in the harvesting process. It was also determined that gins incur a net loss of about \$3.00 per bale of cotton by processing bur extracted cotton. The overall cotton industry was thus found to experience savings of about \$4.00 per bale when a bur extractor is used in the harvesting process.

Funding Generated: Texas Cotton Ginners Association; \$ 5,000 for 1998.

Future Plans: There are no plans to further pursue this research.

Public Dissemination of Results: Results were presented at the Beltwide Cotton Conferences in 1998 and at the Texas Cotton Ginners'/NSDA Gin School in 1998. Two journal articles have been published. All results are provided to the Texas Agricultural Extension Service.

RESEARCH PROJECT PROGRESS REPORT

Title: Cottonseed Pricing Structure in Texas: The Role of Quality, Supply, and Demand Factors

Principal Investigator(s): Sukant K. Misra

Source and Amount of Funding: Cotton Economics Research Institute, USDA, State Support Committee, and Department Funds: \$13,000.

Time Period: Sept. 1997 – Dec. 1998.

Objectives: To determine how supply and demand factors and variations in cottonseed quality attributes affect the price of whole cottonseed.

Description of Project and Significance: The effects of supply, demand, and quality factors on the pricing structure of the Texas cottonseed market are currently unknown. Knowing how supply and supply factors influence cottonseed prices would help cotton producers to better anticipate cottonseed revenues in a given marketing year. If the actual contribution of each quality factor to the cottonseed price were known, it would allow cotton producers to use this information in making production decisions.

Accomplishments: Jane Bondurant, a graduate student of the department, completed this project in December, 1998, in connection with her masters thesis. A hedonic approach was used in analyzing the influence of product as well as market characteristics on cottonseed prices. Results indicate that both the product and market characteristics jointly determine cottonseed prices, and quality premiums and discounts play an important role in price determination. Further, results from this study provide preliminary evidence that the current formula pricing system for cottonseed may be overvaluing the premiums for oil and ammonia and undervaluing the discounts for moisture, free fatty acids, and foreign matter.

Funding Generated: None.

Future Plans: We plan to expand this work to other major production regions of the U.S. and to the national level. However, continuation of this research project will depend on availability of some external financial support.

Public Dissemination of Results: Results were presented at the Beltwide Cotton Conferences, in 1999. A manuscript entitled “The Role of Product and Market Characteristics in Determining Cottonseed Prices” is currently under review for publication consideration in *the Agribusiness: An International Journal*.

RESEARCH PROJECT PROGRESS REPORT

Title: Daily Price Analysis and Reporting for the Texas-Oklahoma Cotton Market

Principal Investigator(s): Sukant Misra & Don Ethridge

Cooperators: Plains Cotton Coop. Assn., The Network (now DTN - Cotnet), Satellite Cotton Exchange (now Intelligent Cotton Market).

Source and Amount of Funding: Cotton Incorporated and the Texas State Support Committee: \$57,825.

Time Period: Sept. 1997 – Aug. 1999.

Objectives: To develop, validate, and operate an objective system for estimating cotton prices and quality attribute premiums and discounts in the Texas-Oklahoma markets and disseminate that information to market participants.

Description of Project and Significance: The Daily Price Estimation System (DPES) has been developed, tested, and reported. Daily estimates of prices and premiums/discounts are generated for each day that has sufficient spot market activity to make reliable estimates. Daily, weekly, and annual reports are produced and released to the market. Several major papers documenting the system and presenting the procedures that have been developed to insure its continued accuracy have been published in professional journals, and numerous industry-oriented publications and presentations have been produced. The DPES offers the only obvious vehicle for improving the producer spot price analysis and reporting system for cotton in the U.S. at this time.

Accomplishments: The research has demonstrated that price estimation and reporting can be done in such a way as to be scientifically verifiable, based on a large daily volume of actual producer spot market transactions, and very timely. It has also shown that USDA's Daily Spot Cotton Quotations (DSCQ) contain errors that are large in some instances, and that the errors are systematic; producers are receiving larger quality premiums and smaller quality discounts from the market than the DSCQ indicate, at least in the Texas-Oklahoma markets. The research further shows that this persistent pattern has resulted in a loan schedule that is causing marketing system pricing inefficiencies.

Funding Generated: This research is instrumental in securing funding of \$368,228 from the Committee for Cotton Research Inc. for an ongoing research project entitled "Development of a National Daily Price Estimation System for Cotton."

Future Plans: We want to continue this work for as long as funding can be secured to support it.

Public Dissemination of Results: Results were presented in two presentations at the Beltwide Cotton Conferences in 1998 and 1999. In addition, results were used in two presentations to industry groups in 1998. All research results are provided to the Texas Agricultural Extension Service as they are generated.

RESEARCH PROJECT PROGRESS REPORT

Title: Demand for and Marketing of Cotton Gin Trash as a Feedlot Ingredient in the Texas High Plains

Principal Investigator: Emmett Elam

Cooperator: Reed Richardson (Animal Science, Texas Tech University)

Source and Amount of Funding: Cotton Economics Research Institute: \$40,780.

Time Period: Sept. 1997 – Aug. 1999.

Objectives: To measure the demand for cotton gin waste (CGW) as a roughage ingredient in a cattle feedlot ration, and to estimate the reduction in ration cost from using CGW (compared to other roughage ingredients) in a cattle feedlot ration.

Description of Project and Significance: The process of ginning cotton in the Texas High Plains produces over 2.1 billion pounds of a byproduct called cotton gin waste (CGW) that is costly to dispose of and is a potential fire hazard. The results of a survey of High Plains ginner indicates that CGW is disposed of at an average cost to the gin plant of \$1.44 per ton. The study used a linear programming (LP) model to derive a demand relation for CGW as a roughage ingredient in a cattle feedlot ration. The estimated demand relation was found to have two segments: an elastic ($e=-3.8$) segment in the price range above \$70 per ton where CGW competes well with other roughage ingredients (alfalfa, cottonseed hulls, and silage) for inclusion in the ration; and an inelastic (vertical) segment where CGW is the cheapest source of roughage (below \$70 per ton). The LP model was solved with and without CGW to determine the impact that CGW has on ration cost. The LP results showed that ration cost is reduced by 5% when CGW (at \$20 per ton) is included as a roughage ingredient.

Accomplishments: The results of this research demonstrate the value of CGW as a cattle feedlot roughage ingredient and provide important information for developing strategies to promote and market CGW to feedlots. In addition, this research helped in developing two multidisciplinary research proposals involving ag. economists, ag. engineers and animal scientists: (1) "Technical and Economic Feasibility of Processing Cotton Gin Trash as Livestock Feed" was submitted to the Adv. Tech. Program, Texas Legislature (\$188,234 requested for Jan. 2000-Dec. 2001); (2) "Impacts of Grain Sorghum Quality and Processing Methods on Utilization by Beef Cattle: Economic Advantage to Sorghum Producers" was submitted to the PROFIT program, Texas Legislature (\$70,000 requested for Sept. 1999-Aug. 2001).

Funding Generated: This research was instrumental in involving Ag. & Appl. Economics (with USDA-ARS Lubbock Gin Lab and the Anim. Sci. dept. at TTU) in the Cotton Byproducts (COBY) project funded by Cotton Inc.; \$25,000 for Jan.-Dec. 2000.

Future Plans: We plan to continue to explore alternative markets for CGW and to perform economic analyses on processes that add value to CCW.

Public Dissemination of Results: Results were presented at the Beltwide Cotton Conferences in 1998 and 1999. One journal article (rough draft) was written. One TV interview was done

and three interviews were done with magazine and newspaper journalists. In addition, copies of the Cotton Gin Waste Survey results were sent to 85 cotton gin operators who completed the survey.

RESEARCH PROJECT PROGRESS REPORT

Title: Developing a Cotton Processing Quality Simulation Model

Principal Investigator(s): Sukant Misra

Cooperator: Dr. Garry Barker, ARS/USDA

Source and Amount of Funding: ARS/USDA: \$60,783.

Time Period: Sept. 1998 – Aug. 1999.

Objectives: The objective of this project is to develop a cotton processing simulation model to provide insight into the effects of operating parameters, drying, cleaning and ginning on fiber quality factors. The simulation model will estimate cotton quality as it passes through the various sequences of gin machinery used to process stripper harvested cotton and should allow the ginner to optimize the ginning process.

Description of Project and Significance: The final quality and value of the ginned lint are a function of the initial conditions of the seed cotton, the number, type, and sequence of overhead (seed cotton) cleaning and drying machines, the number and type of lint cleaning machines, the mass flow rate through the machines and individual machine operating parameters. If initial conditions of each bale of seed cotton were the same, a standardized sequence of ginning activities could be identified to optimize the final quality and value of the ginned lint. However, the initial conditions of the seed cotton often vary due to a host of factors that are beyond a producer's control, making it necessary to alter the sequence of ginning activities required to optimize the quality of each bale of cotton.

Availability of a cotton processing quality simulation model will benefit the ginner in that the model can be amenable to manipulation in the sequence of ginning activities which would be impossible, too expensive, or impractical to perform in the real world setting.

Accomplishments: During the last year, we made some significant progress in the execution of the project. We have completed the organization and tabulation of the experimental data collected from USDA/ARS. Using the old database, we have now completed replicating the mathematical relationships involved in the GINQUAL model. This is an important step in verifying and modifying the mathematical relationships of the GINQUAL model. Now, we will initiate the modeling work using the new data, which will be undertaken in two phases. First, we want to run the models using just the new data set, and then we will merge the old and new databases and put it through an extensive set diagnostics.

Funding Generated: The research has generated no further funding at this time.

Future Plans: This research is expected to be concluded by the end of 1999/2000 fiscal year.

Public Dissemination of Results: None.

RESEARCH PROJECT PROGRESS REPORT

Title: Development of a National Daily Price Information System for Cotton

Principal Investigator(s): Don Ethridge & Sukant Misra

Cooperators: Plains Cotton Coop. Assn., The Network (now DTN - Cotnet), Satellite Cotton Exchange (now Intelligent Cotton Market).

Source and Amount of Funding: Committee for Cotton Research, Inc.: \$368,228.

Time Period: Sept. 1998 – Aug. 1999.

Objectives: To extend the Daily Price Estimation System, or DPES, which is already developed for the Southwest cotton production region, to the other market regions in the U.S. Specifically, the general objective of this project is to develop, validate, and operate an objective system for estimating cotton prices and quality attribute premiums and discounts in all market regions in the U.S. and to disseminate that information to market participants.

Description of Project and Significance: The Daily Price Estimation System (DPES) has been developed, tested, and reported for the Southwest cotton production region. Daily estimates of prices and premiums/discounts are generated for each day that has sufficient spot market activity to make reliable estimates. Daily, weekly, and annual reports are produced and released to the market. Several major papers documenting the system and presenting the procedures that have been developed to insure its continued accuracy have been published in professional journals, and numerous industry-oriented publications and presentations have been produced. The DPES offers the only obvious vehicle for improving the producer spot price analysis and reporting system for cotton in the U.S. at this time. Thus, there is a need to extend the DPES to the remainder of the cotton growing regions.

Accomplishments: Since initiating the project on September 1, 1998, we hired a Post Doctoral Research Associate (Dr. Kalyan Chakraborty), a Research Assistant (Kevin Hoelscher) and a Student Assistant (Jason Ward) to assist in the implementation of the National project. A Price Analysis Laboratory was also set up to better coordinate and manage the activities of the project. In September 1998, we met with representatives from the Data Transmission Network (DTN) and the Intelligent Cotton Market (ICM) and developed a system for collecting data on individual lot sales of cotton on a daily basis for the Southeast region. Both the organizations undertook programming modifications to their systems to electronically transfer data to us on a daily basis. Further, we made arrangements with DTN to collect the 1997 sales data for the Southeast to begin the development of an econometric model for that region. At our request, DTN contacted about 90 gin managers in the Southeast region for permission to dial-in on to their computers for downloading their 1997 transaction data.

The first setback to our effort was that neither DTN nor ICM sold much cotton outside the Southwest region over their computerized marketing systems for the 1998 crop year. Thus, the daily transferring of transaction data did not occur for the 1998/99 marketing year, hindering the progress in developing a database for the Southeast region. It is obvious that data transmission from these agencies continues to be a priority, without which we will be unable to accomplish the important task of expanding the DPES for the Southwest to other regions of the

country. Representatives of both DTN and ICM assure us that their systems have been fine-tuned to electronically transfer data to us on a daily basis, and there should not be any transmission difficulties of the daily transaction data for the 1999/00 marketing year. Mr. David Goode (DTN) expects that at least 10-15 gins from the Southeast will use DTN's computerized marketing system in 1999/00 marketing year. Mr. Jack Ward (ICM) does not know what to expect this year, but assures us of their total cooperation in providing us with the data as they become available.

Funding Generated: None.

Future Plans: We want to continue this work for as long as funding can be secured to support it.

Public Dissemination of Results: None.

RESEARCH PROJECT PROGRESS REPORT

Project Title: The Economics of Precision Farming in Cotton Production

Principal Investigators: Eduardo Segarra and Wayne Keeling
Research Assistant: Man Yu

Source and Amount of Funding: Cotton Economics Research Institute: \$29,000.

Time Period: Sept. 1997 – Aug. 1999.

Objective: To evaluate the profitability and possible environmental implications of precision farming practices in cotton production in the Texas High Plains. Focus is being placed on the precise application of fertilizer and irrigation water in cotton production, as well as in other crops.

Description of Project and Significance: Production agriculture is facing significant changes, including changing federal farm programs, escalating costs of production, pest resistance to chemicals, and public concern about the impacts of agricultural production on the environment. Texas High Plains cotton producers increasingly compete in the global economy to produce a quality product at competitive prices while using production practices that are benign to the environment. Agricultural researchers and producers are responding to these challenges by developing and adopting new and advanced agricultural production technologies. Historically, agricultural crop production management practices treat crop fields uniformly. That is, no within field spatial disaggregation of inherent characteristics and/or the impacts of applied inputs of production is conducted with respect to soil fertility, soil water holding capacity characteristics, weed and pest infestations, fertilizer use, water use, and yield potential. Precision farming, precision agriculture or site-specific management recognizes within field spatial variability and seeks to optimize variable input use within the field. These practices have great potential for improved input utilization efficiency, enhancement of profits, and reduction of environmental impacts from crop production.

Accomplishments: Mr. Man Yu, the Ph.D. student working in this project, finished his Ph.D. Dissertation proposal entitled: “Economic Evaluation of Precision Farming Practices” and will be defending his proposal shortly. It is anticipated that his dissertation will be completed during the upcoming year, and that it will lead to the development of several publications and presentations at regional and national meetings.

Funding Generated: This project helped secure \$14,300 during 1998-1999 for cotton and grain sorghum precision farming research under the Precision Agriculture Legislative Initiative, TAES-Texas A&M University. Also, continued support for the economic evaluation of precision farming practices in cotton, grain sorghum, corn, and peanuts at approximately \$20,000 per year for the 1999-2001 period has been secured under the Precision Agriculture Legislative Initiative, TAES-Texas A&M University.

Future Plans: To continue to provide objective information on the economics of precision farming practices to enhance Southern High Plains agricultural producers’ farm level decision-making.

Public Dissemination of Results: Two presentations of precise phosphorous use in cotton were made at the Beltwide Cotton Conferences. A presentation on the Economics of precision farming practices was made at the 1998 AG-CARES field-day in Lamesa, Texas. Also, because parallel studies to the evaluation of cotton precision farming practices are on-going for grain sorghum and corn production in the Southern High Plains of Texas, two additional professional presentations were prepared. A grain sorghum related presentation was made at the 1999 Sorghum Production Conference, and a corn related presentation will be made at the 1999 ASA-CSSA-SSSA Annual Meetings.

RESEARCH PROJECT PROGRESS REPORT

Title: Effects of Cotton Price Policies in India and Pakistan on Domestic Cotton and Textile Industries and on Trade in Cotton and Yarn.

Principal Investigator(s): Don Ethridge

Cooperators: International Cotton Advisory Committee; Dr. Sukant Misra; Dr. Darren Hudson, Asst. Professor, Mississippi State University.

Source and Amount of Funding: USDA National Research Initiative Program: \$115,000.

Time Period: 1995/96 – 1998/99.

Objectives: To estimate the effects of cotton policy structures in India and Pakistan on (1) production, consumption, and trade in cotton and textiles in those countries, (2) global trade of cotton and textiles, (3) societal welfare in those countries, and (4) economic growth in those countries.

Description of Project and Significance: This research involves econometric modeling of the cotton, textile, and trade sectors of India and Pakistan for the purpose of analyzing the effects of a set of cotton policies on those countries and on major trading partners. This research, while focused on other countries, has important policy implications for the U.S. industry, which is why USDA supports it. It also has implications for sectoral policies in other countries, which is why the World Bank and ICAC are interested.

Accomplishments: The analysis on Pakistan has been completed. The export taxes on cotton fiber pursued by Pakistan until 1995 kept internal prices low in order to subsidize the Pakistani yarn industry. The policy served to expand yarn production and exports, but relatively little benefit accrued to the Pakistan economy. That is, importers of Pakistani yarns captured most of the benefits through lower prices and the yarn mills failed to re-invest in the industry. The overall effect of the policy was that it cost Pakistan about 2% of its Gross Domestic Product. A Ph.D. dissertation was completed on the work.

In spite of all our efforts we were unable to gather an adequate data set on the export limitations placed by the government of India on cotton, yarns, and textiles with which to complete a model for India. Thus, we have instead resorted to a descriptive analysis of the India's cotton price policy and trade. We are now in the final stage of completing the Final Technical Report for this project.

Funding Generated: The research has generated no further funding at this time.

Future Plans: The results on India will be available by November, 1999.

Public Dissemination of Results: A presentation on Pakistan was made at the 1998 Beltwide Cotton Conferences and another presentation was made at the Southern Agricultural Economics Association annual meeting in August, 1998.

RESEARCH PROJECT PROGRESS REPORT

Title: Evaluating Crop and Revenue Insurance Products as Risk Management Tools for Texas Cotton Producers

Principal Investigator(s): Sukant Misra

Source and Amount of Funding: Cotton Economics Research Institute: \$15,000.

Time Period: Sept. 1998 – Aug. 1999.

Objectives: The overall objective of this research is to evaluate the effectiveness of various crop and revenue insurance products as risk management tools for Texas cotton producers. The proposed research will develop a flexible means of evaluating economic impacts of crop and revenue insurance purchase decisions for cotton producers.

Description of Project and Significance: Changes in farm programs and other new approaches to farm policy, including increased reliance on the global marketplace, have now exposed producers to increased levels of both production and marketing risk. Managing this increased risk is a key to economic competitiveness and success of U.S. and Texas producers. Texas has the largest area devoted to cotton production of any single state. Texas cotton farmers produced approximately 4.4 million bales of cotton for a value of about \$1.6 billion, approximately 25 percent of the total production in the United States in 1996. Given the availability of various insurance options with varying provisions, costs, and protection levels, there is a need for producers to better understand their effectiveness as risk management tools. The proposed research will develop a flexible means of evaluating economic impacts of crop and revenue insurance purchase decisions for cotton producers.

Accomplishments: During the last year, we have made some significant progress in the execution of the project. Jim Ed (graduate student working on the project) has completed a draft of his research proposal including introduction, literature review, conceptual framework, and methods and procedure. He is currently finalizing the proposal and is tentatively scheduled to defend it in September. He has also collected much of the secondary data that are expected to be in the empirical model. We expect to initiate the empirical work starting the Fall 1999 semester.

Funding Generated: The research has generated no further funding at this time.

Future Plans: This research is expected to be concluded by the end of 1999/2000 fiscal year.

Public Dissemination of Results: None.

RESEARCH PROJECT PROGRESS REPORT

Title: Gin Lint Cleaning to Maximize Producer Net Returns

Principal Investigators: Sukant Misra and Gary Barker (ARS/USDA)

Source and Amount of Funding: Cotton Incorporated and the Texas State Support Committee: \$7,740.

Time Period: Jan. 1997 – Dec. 1998.

Objectives: To determine the optimum number of lint cleanings in the gin plant, which maximizes producer profit.

Description of Project and Significance: A persisting question with cotton cleaning is that of determining the optimum number of lint cleanings in the gin plant which maximizes producer profit. Previous research on machine-stripped cotton had found two lint cleanings to be maximizing producer net returns and existing practice also calls for two lint cleanings in the gin plant. Bennett, Misra, and Barker (1996) investigated the question of lint cleaning for a limited number of cultivars and management practices, and prescribed one lint cleaning in the gin plant as the optimum from producers' perspective. The objective of this proposed research is to determine whether one lint cleaning is optimum for a broader spectrum of cotton varieties and management practices.

Accomplishments: Initial results indicate net returns to be consistently higher for one lint cleaning in the gin plant for a broader spectrum of cotton varieties and management practices. Exact estimates are currently unavailable, but one lint cleaning appears to increase producers' net revenue by an average of \$5.00/bale. Final results should be available by December 1998.

Funding Generated: This research has helped to secure funding of \$60,783 from USDA/ARS for a forthcoming project entitled "Developing a Cotton Processing Simulation Model."

Future Plans: No further extensions of this research are planned at the present.

Public Dissemination of Results: Results were presented at the Beltwide Cotton Conferences, in 1998 and one journal article and another magazine article were also published. Another journal article is forthcoming. All results have been provided to the Texas Agricultural Extension Service for further dissemination.

RESEARCH PROJECT PROGRESS REPORT

Title: Inter-Sectoral Relationships in the Cotton Industry

Principal Investigator(s): Sukant K. Misra

Source and Amount of Funding: Cotton Economics Research Institute and Departmental Funds: \$60,000.

Time Period: Sept. 1995 – Aug. 1998.

Objectives: To determine the economic interrelationships between the production and agribusiness sectors of the Texas cotton industry and to measure the economic effects of changes in the production sector on the agribusiness sectors.

Description of Project and Significance: Along with the obvious interdependence among the cotton production, ginning, merchandising, and textile mill sectors, the cotton industry brings together many other agribusinesses such as the input, cottonseed oil mill, and warehousing sectors. Currently some empirical tools are available to evaluate the impact of market changes on the production sector, however, no tools are available to assess the economic interdependence of the production and the agribusiness sectors of the cotton industry. This project should provide not only a better understanding of how these sectors are interdependent on each other, but also should provide a tool to measure the economic effects of changes in one sector on others. Such an economic tool should be beneficial for both the cotton industry and policy makers in maintaining the competitive position of U.S. cotton in the domestic market and abroad.

Accomplishments: Blake Bennett, a graduate student of the department, completed this project in May 1999, in connection with his doctoral thesis. A multi-sectoral econometric model was developed to analyze the economic interrelationships among various sectors of the cotton industry. Results indicated that a one bale increase in production generated \$673 in revenues for the industry, of which about 80% was absorbed by the production sector. Further, textile mill level price variability was found to affect the production and ginning sectors, but not the merchant/shipper sector.

Funding Generated: None.

Future Plans: We want to continue this work for as long as funding can be secured to support it. We would like to expand this analysis to the other major production regions of the U.S. and to the national level.

Public Dissemination of Results: Results will be presented at the Beltwide Cotton Conferences, in 2000 and at the 2000 annual meetings of the Southern Agricultural Economics Association.

RESEARCH PROJECT PROGRESS REPORT

Title: Management Strategies for Optimum Input Use, Yields and Quality of Cotton in the Texas High Plains.

Principal Investigators: Octavio Ramirez, Phillip Johnson and Don Ethridge; Dan Krieg, Cary Green and Richard Zartman (Department of Plant & Soil Science); Eric Hequet and Dean Ethridge (International Textile Center).

Source and Amount of Funding: International Cotton Research Center: \$25,286.

Time Period: Sept. 1998 – Nov. 1999.

Objectives: To determine and quantify how cotton production system variables individually and collectively affect cotton yields and quality attributes, and to develop general optimization (input use) prescriptions for alternative weather and resource availability situations.

Description of the Project and Significance: The Texas Tech Plant & Soil Science Department has numerous data sets from experiments conducted over many years. A first step is to compile the data into a single file and format suitable for statistical analysis. Six production functions will be estimated. These model the relationships between cotton lint and seed yields, quality factors (staple, micronaire, and strength) and turnout that can be expected when using different production practices (varieties, irrigation water rates, and phosphorus fertilization methods and rates) given the prevailing uncontrollable factors. The production response functions will be used to predict the effect of different, feasible combinations of the crop production and management practices and varieties investigated on cotton yields and quality, under average and alternative temperature and rainfall scenarios. The production costs will be estimated from experimental data and consultation with farmers and cotton experts. The cotton (base-quality) prices, and the premiums and discounts resulting from the quality variations will be predicted using current Texas Tech research. The combination of practices that would provide the maximum profits under the different weather pattern scenarios will be identified from the former. The impact of variations in West Texas weather on the recommended crop management practices and on the profitability of cotton production will also be evaluated using this information.

Accomplishments: Accomplishments to date include compiling the data and estimated the six cotton yield & quality response functions.

Funding Generated: The preliminary results of this project have been used to secure additional funding from the International Cotton Research Center to continue with the research during the 1999/2000 period. They will also be used to support the submission of a multidisciplinary research project on optimal use of water resources to the Dean's office.

Future Plans: The estimated production response functions will be used to conduct the proposed economic (cost/benefit) analysis.

Public Dissemination of Results: The results on the effect of management practices and genetic factors on cotton yields and quality will be presented at the 2000 Cotton Beltwide Conferences.

RESEARCH PROJECT PROGRESS REPORT

Title: A Marketing Strategy for Cotton Producers Based on Mean Reversion in Cotton Futures Prices

Principal Investigator: Emmett Elam

Source and Amount of Funding: Cotton Inc.: \$6,720.

Time Period: Jan. – Dec., 1999.

Objectives: To develop and test a simple marketing strategy to increase returns for Texas cotton producers.

Description of Project and Significance: One objective of a cotton producer is to market his crop at favorable prices. However, this is quite challenging, and, in fact, it is probably easier to increase yield and reduce production cost than to implement a successful marketing strategy. Nevertheless, a cotton producer should not ignore the potential to increase returns through better marketing strategies. This will be particularly important in the future as government programs are phased out and cotton producers are obliged to market their cotton in a highly competitive, international marketplace.

This research will develop and test a simple marketing strategy to increase returns for Texas cotton producers. The strategy will be based on an anomaly in futures pricing termed mean reversion, which is the tendency of a commodity price, when disturbed from its equilibrium value, to revert back to the equilibrium. A marketing strategy based on mean reversion calls for selling futures when the price is above the equilibrium (historical mean) value. The cotton producer can use the anticipated profit from the futures market to supplement the revenue received from the cash market.

Accomplishments: A literature review was conducted to find statistical procedures for testing mean reversion in cotton futures prices. A historical data set of cotton futures prices (1980-present) was collected.

Funding Generated: None.

Future Plans: Provide information to cotton producers (through the extension service and popular outlets) about the marketing strategy developed in this research.

Public Dissemination of Results: None to date

RESEARCH PROJECT PROGRESS REPORT

Title: Standardized Performance Analysis for Cotton Production

Principal Investigators: Phillip Johnson and James McGrann (Texas A&M University)

Source and Amount of Funding: Texas State Support Committee (\$40,485 for 1/1/98 through 12/31/99) and Cotton Economics Research Institute (\$24,000 for 9/1/97 through 8/31/99).

Time Period: Sept. 1997 – Dec. 1999.

Objectives: (1) Develop standardized guidelines for an integrated production, marketing, and financial analysis of the cotton enterprise; (2) Support development and field testing of the crop SPA software for farms that are primarily engaged in cotton production, (3) Implement the crop SPA to develop cotton production, marketing, and financial performance measures for cotton producers, (4) Initiate development of a program to summarize SPA analysis into a meaningful data base of production, marketing, and financial information.

Description of Project and Significance: The SPA Project is an ongoing project in cooperation with the Texas Agricultural Extension Service. SPA is an integrated production, marketing, and financial analysis program for enhancing farm level decision making. The SPA program analyzes the whole farm financial performance of an agricultural operation using accrual adjusted financial statements constructed from the farm's records. In addition to the whole farm analysis, the SPA program also compiles an analysis of the individual crop enterprises within the farming operation. This includes an analysis of total crop production, unit cost of production and profitability of the crop enterprises. The information from the crop enterprise analysis is then further broken down into a sub-enterprise analysis, which focuses on the performance of specific farms or fields within each crop enterprise. There are approximately 15 current participants in the project.

Accomplishments: A computer program to perform the multi-enterprise SPA analysis was developed and field-tested. The SPA program has been used to analyze cotton-farming operations in the Texas High Plains Region for the crop years 1995, 1996, 1997, and 1998. Work has started on the development of the second generation SPA software that will incorporate the experience gained in working with the initial SPA-ME software and be designed to interface directly with the data base program. A database program has been developed and used to compile the analysis for the 1995, 1996 and 1997 crop years. The database program provides total business financial reports that summarize the whole farm financial situation and "report cards" for individual enterprise observations. The report card gives a producer information for each enterprise observation on their farm in comparison with the average of all observations for that type of enterprise and crop year.

Currently, there are a Research Assistant and two student assistants working on the project, with responsibilities of working with participants to complete their analysis.

Funding Generated: None at this time.

Future Plans: Collection of costs and profitability information on different production practices, such as tillage practices (conventional vs. reduced tillage), cropping systems (ultra narrow row) and biotechnologies (Bt and roundup ready). In addition, participants with grain sorghum production will be contacted to develop information on grain sorghum costs and profitability.

Public Dissemination of Results: Two papers were presented at the Beltwide Cotton Conferences in 1999. A journal article has been accepted for publication in the *Journal of Cotton Science* and two manuscripts have been submitted to journals for review. A news article was published in the *Southwest Farm Press*.

RESEARCH PROJECT PROGRESS REPORT

Title: Supply and Demand for Fiber Attributes for the Texas and Oklahoma Producer Cotton Market

Principal Investigator(s): Sukant Misra

Source and Amount of Funding: Texas State Support Committee and Committee for Cotton Research: \$12,000.

Time Period: Sept. 1998 – Aug. 1999.

Objectives: The general objective of this study is to examine changes in cotton fiber attribute values for the Texas and Oklahoma cotton marketing regions resulting from the supply of and demand for these attributes.

Description of Project and Significance: While many studies of price discovery analysis on cotton have been conducted, they have merely identified cotton prices as a function of its characteristics. These studies provide only a static view of the cotton market. The focus is on price discovery, not price formation, i.e., these studies have succeeded in discovering the relationship between cotton prices and quality characteristics of lint, given cotton fiber attribute values. However, the fundamental relationships that dictate how and why cotton fiber attribute values are formed have been largely ignored. Thus, the general objective of this study is to examine changes in cotton fiber attribute values for the Texas and Oklahoma cotton marketing regions resulting from the supply of and demand for these attributes. Results of this study could be instrumental in a clear understanding of the cotton price formation process.

Accomplishments: During the last year, we have made some significant progress in the execution of the project. Kevin Hoelscher (graduate student working on the project) has completed a draft of his research proposal including introduction, literature review, conceptual framework, and methods and procedure. He is currently finalizing the proposal and is tentatively schedule to defend it in September. He has also collected much of the data that are expected to be in the empirical model. We expect to initiate the empirical work starting the Fall 1999 semester.

Funding Generated: The research has generated no further funding at this time.

Future Plans: This research is expected to be concluded by the end of 1999/200 fiscal year.

Public Dissemination of Results: None.

RESEARCH PROJECT PROGRESS REPORT

Title: Textile Manufacturers' Pricing of Cotton Quality Attributes

Principal Investigator: Don Ethridge

Source and Amount of Funding: Cotton Economics Research Institute (\$18,399 for Sept. 1997 – Aug. 1999) and Cotton Incorporated (\$28,594 for Jan. 1998 - Dec. 1999).

Time Period: Jan. 1997 – Dec. 1999.

Objectives: To identify market premiums and discounts paid for cotton fiber attributes by U.S. textile manufacturers.

Description of Project and Significance: Data on contracted purchases of cotton by textile manufacturers are collected from textile manufacturers; all data are *bona fide* market transactions. The data are collected twice each year and compiled into a pooled data set, which represents a large sample of transactions across that market spectrum. Hedonic price analysis is used to estimate the market premium and discount structure for the various HVI quality attributes of cotton, by region of origin of the cotton.

This information is important for the efficient functioning of the cotton marketing system; knowledge of how the end-users of cotton value the attributes of the cotton affects all of the other market segments—merchants, ginneries, and farmers. These market signals must be analyzed and reported for the industry to have the information because the complex premiums and discounts are not directly observable in the marketplace.

Accomplishments: Updates of the large and complex data set from cooperating firms was done twice during the year. Estimates of premiums and discounts were done for 1997 and 1998, with results reported at the 1998 and 1999 Beltwide Cotton Conferences. Work continues, in cooperation with the Cotton Incorporated EFS system, to computerize the data gathering and reporting of results. The data and models are being organized to facilitate a study of the changes in price structures over time.

Funding Generated: Special Item funding was used to secure funding from Cotton Incorporated.

Future Plans: To continue collecting data from cooperators, updating the premium/discount estimates, and to determine the causes of price differences across regions and through time. Results of the analyses are being posted on the Cotton Economics Research Institute website and will be updated each six months.

Public Dissemination of Results: Results were presented at the Beltwide Cotton Conferences in 1998 and 1999. Results were also used in three presentations to industry groups. In addition, all research results are provided to the Texas Agricultural Extension Service as they are generated so that they can be made available to the public and the cotton industry through their educational system.

APPENDIX B

SUMMARY OF COTTON ECONOMICS RESEARCH FUNDING

1997/98 – 1998/99

External and Special Item Funding of Cotton Econ. Research: Dept. of Agri. and Applied Econ.

Name/Funding Source	1997/98	1998/99	Cummulative
Emmett Elam			
Special Item	19,257	21,323	40,780
Cotton Foundation	6,000	5,400	12,000
CI	0	4,480	4,480
Total External	6,600	6,000	12,000
Leverage Ratio	0.3:1	0.5:1	0.4:1
Don Ethridge			
Special Item	11,399	7,000	18,399
F&F Institute	8,078	8,078	16,156
CI	14,513	14,400	28,913
USDA	14,375	14,375	28,750
CCR	0	61,667	61,667
Total External	36,966	98,520	135,486
Leverage Ratio	3.2:1	14.1:1	7.4:1
Phillip Johnson			
Special Item	12,000	12,000	24,000
CI	22,000	21,283	43,283
ICRC	0	10,114	10,114
Total External	22,000	31,397	53,397
Leverage Ratio	1.8:1	2.6:1	2.2:1
Sukant Misra			
Special Item	24,226	19,711	43,937
USDA	14,375	43,525	57,900
CI	22,512	28,532	51,044
TCGA	5,000	0	5,000
CCR	0	61,667	61,667
Total External	41,887	133,724	175,611
Leverage Ratio	1.7:1	6.8:1	4:1
Octavio Ravirez			
Special Item	0	23,875	23,875
ICRA	0	10,114	10,114
Total External	0	10,114	10,114
Leverage Ratio	0	0.4:1	0.4:1
Eduardo Segarra			
Special Item	12,000	17,000	29,000
CI	4,000	0	4,000
TAES	14,300	14,300	28,600
Total External	18,300	14,300	32,600
Leverage Ratio	1.5:1	0.8:1	1.1:1
David Willis			
Special Item	0	10,040	10,040
Total External	0	0	0
Leverage Ratio	0	0:1	0:1
Total			
Special Item ¹	133,478	133,478	266,956
Total External	125,753	297,935	423,688
Leverage Ratio	0.9:1	2.2:1	1.6:1

¹Includes department operating expenses

APPENDIX C

PUBLISHED OUTPUT RELATED TO COTTON ECONOMICS

1997/98 – 1998/99

PUBLICATIONS ON COTTON ECONOMICS

September 1997 – August 1999

**Department of Agricultural and Applied Economics
Texas Tech University**

JOURNAL ARTICLES:

Arabiyat, T.S., E. Segarra, and D.B. Willis. "Sophisticated Irrigation Technology and Biotechnology Adoption: Impacts on Ground Water Conservation." *AgBioForum*, 2(No. 2, 1999): 132-136 (located in the World Wide Web: <http://www.agbioforum.missouri.edu>).

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Bennett, B., M. Middleton, E.Segarra, and J.W. Keeling. 1997. Economics of Yield and Returns Variability with Dryland Cropping Systems. *Texas Journal of Agricultural and Natural Resources*, 10(1): 65-75.

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Ethridge, D. and D. Hudson. "Cotton Market Price Information: How it Affects the Industry." *Journal of Cotton Science*, 2(No. 1, 1998): 68-76.
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PROCEEDINGS PAPERS:

Asher, B.S., J. W. Keeling, P.A. Dotray, and E. Segarra. 1998. Performance and Economics of Cotton Weed Management Systems in the Texas Southern High Plains. *Proceedings of the Southern Weed Science Society: Preparing for the New Millennium*: 44-45

Beaty, D., and P. Johnson. "Analyzing the Expansion Abilities of Mid-Sized Farms in the Texas Southern High Plains." *1999 Beltwide Cotton Conferences Proceedings*, National Cotton Council, Orlando, FL: 286-293.

Bennett, B. K. and Sukant K. Misra. "A Decision Tool to Determine the Optimal Level of Lint Cleanings for Irrigated and Dryland Cotton." *1998 Beltwide Cotton Conferences Proceedings*, National Cotton Council, Memphis, TN: Vol. 1:318-322.

Bondurant J. and D. Ethridge. "Proportions of the Retail Dollar Received by Cotton Industry Segments: Selected Consumer Goods." *1998 Beltwide Cotton Conferences Proceedings*, National Cotton Council, Memphis, TN: 306-311.

Bondurant, Jane and Sukant K. Misra. "The Texas Cottonseed Pricing Structure: An Analysis of the Impact of Demand and Quality Factors." *1999 Beltwide Cotton Conferences Proceedings*, National Cotton Council, Orlando, FL: 334-339.

Castleberry, Mark, and Emmett Elam. "Economics of Cotton Gin Waste as a Roughage Ingredient in Cattle Feedlot Rations on the Texas High Plains." *1999 Beltwide Cotton Conferences Proceedings*, National Cotton Council, Orlando, FL: 1472-1478.

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APPENDIX D
PRESENTATIONS THAT WERE NOT
PUBLISHED IN ANY OUTLET
1997/98 – 1998/99

**PRESENTATIONS THAT WERE NOT
PUBLISHED IN ANY OUTLET
1997/98 – 1998/99**

**Department of Agricultural and Applied Economics
Texas Tech University**

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APPENDIX E

SUMMARY OF SERVICE ACTIVITIES RELATED TO COTTON ECONOMICS

1997/98 – 1998/99

SUMMARY OF COTTON ECONOMICS SERVICE ACTIVITIES

Faculty in the Department of Agricultural and Applied Economics place considerable emphasis on service activities and make deliberate efforts to involve in cotton related service activities with the cotton industry, government, the research and educational communities, and the general public. This report gives a summary description of service activities during the past two years.

The faculty have responded to numerous requests for information and assistance for which we have no formal record. These requests have come from all segments of the cotton industry, including farmers, ginner, merchants, input suppliers, textile manufacturers, etc. We have also received requests from broadcast media, general public, and other countries (Australia, Germany, Switzerland, Mexico, etc.) on various aspects of the cotton industry. Faculty members made presentations to various groups, including the ginning sector at Lubbock Gin School, the NCC Loan Premium and Discount Task Force in Memphis, the textile sector in Switzerland and Germany, and the members of the Agricultural and Natural Resource Summit.

Other substantial types of service activities during the biennium included assistance in regulatory activities and involvement in programs sponsored by other universities. These include, presentations to Texas Farm Bureau Division, Texas State Support Committee, the Blackland Income Growth Conference, Texas Senate Committee on Electric Utility Restructuring, High Plains Ogallala Regional Water Management Planning Group, and presentations sponsored by Texas Agricultural Extension Service, Texas Department of Agriculture, and the U. S. Department of Agriculture. Faculty also participated in the Plains Cotton Advisory Committee activities, provided information for elected officials, public agencies, and school systems, and provided economic intelligence to the public on matters related to the cotton economy.

APPENDIX F

COTTON ECONOMICS RESEARCH UPDATE

January 1998, July 1998, January 1999, and July 1999 Issues